Chapter Review – Chapters 1&2

1) Given points A(2,3) and B(-2,1), find the equation of the line that passes through A and B in point-slope and slope-intercept form

2) Find the equation of a line CD parallel to line AB which passes through the point C(2,-3) in point-slope and slope-intercept form.

3) The average height in centimeters of US children from ages 7 to 15 is given in the table below. Use this information to answer the questions below.

Age (years)	7	8	9	10	11	12	13	14	15
Height (cm)	119.3	127.0	132.0	137.1	142.2	147.3	152.4	157.5	162.2

a) Which variable should be the independent and which the dependent?
b) What is a reasonable domain and range for this situation?
c) Find the best-fit line for the data.
d) Give the slope and its real-world meaning.
e) Give the y-intercept and its real-world meaning.
f) Discuss the correlation coefficient.
g) Use your best-fit line to find the height of a newborn and a 40-year-old.
How do your values compare with the actual length of a newborn (≈50cm) and a 40-year-old? (1inch = 2.54cm)

Solve for x.

4) $3(7-2x)+5=23$

5) $-6(3x-7)+22x>50$

6) $2|3x-4|-6<2(4-x)$

7) $4-3(3+4x)=-7(2x-1)-8$

8) $\frac{3ax}{5}-4c=\frac{ax}{5}$

9) $-2+\frac{3(x-2)}{4}\leq -1$

10) $|2x-4|+5=21$

11) $\frac{2}{3}|3x-6|=4(x-2)$

12) $\left|\frac{(x-3)}{2}\right|+2<6$

13) $3|4x-1|\geq 6(4-x)$

Answers:

1) Point-Slope: $y = \frac{1}{2}(x - 2) + 3$ or $y = \frac{1}{2}(x + 2) + 1$

   Slope-Intercept: $y = \frac{1}{2}x + 2$

2) Point-Slope: $y = \frac{1}{2}(x - 2) - 3$

   Slope-Intercept: $y = \frac{1}{2}x - 4$

3)

   a. Independent: x–variable; Dependent: y-variable
   b. Domain (7, 15) Range (119.3, 162.2)
   c. $y = 5.235x + 84.304$
   d. Slope is 5.0833 and it means that between the ages of 7 and 15 the average child grows 5.0833 cm per year
   e. The y-intercept is 86.31667 and in the context of this problem, this would be the height in cm of a newborn.
   f. The Correlation Coeffient is r = 0.9986 which means that there is a very high correlation between the age and height of children between the ages of 7 and 15.
   g. According to the model, a newborn would be 84.304cm and a 40-year-old would be 293.7cm. These heights are both unrealistic because average growth for children under 7 is faster than 5cm per year and the typical person does not continue to grow until 40.

4) $x = \frac{1}{2}$

5) $x > 2$

6) $x \geq \frac{-3}{2}$ and $x < \frac{11}{4}$

7) $x = 2$

8) $x = \frac{10c}{a}$

9) $x \leq \frac{10}{3}$

10) $x = -6, 10$

11) $x = 2$

12) $-5 < x < 11$

13) $x \leq -\frac{7}{2}$ or $\frac{3}{2} \leq x$